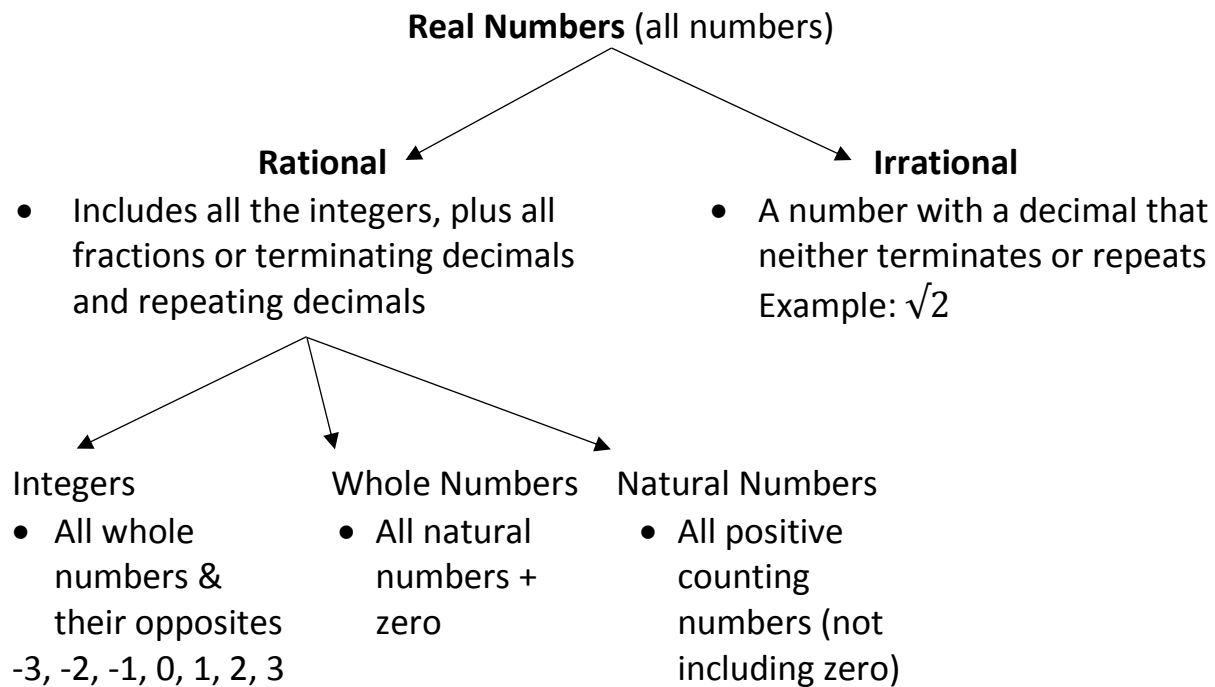


## 01 - Review Part 1 – Numbers & Operations



### Part A: Operations with integers

#### 1. Addition

ex1:  $(-12) + (-5)$

or

$$\begin{aligned} &= -12 - 5 \\ &= -17 \end{aligned}$$

ex2:  $18 + (-5)$

or

$$\begin{aligned} &= 18 - 5 \\ &= 13 \end{aligned}$$

#### 2. Subtraction

ex1:  $-15 - (-8)$

$$\begin{aligned} &= -15 + 8 \\ &= -7 \end{aligned}$$

ex2:  $10 - x$

let  $x = -2$

$$\begin{aligned} &= 10 - (-2) \\ &= 10 + 2 \\ &= 12 \end{aligned}$$

### 3. Multiplication and Division

ex1:  $6 \times 8$

$$= 48$$

ex2:  $(-36) \div (-9)$

$$= 4$$

ex3:  $-5 \times 9$

$$= -45$$

ex4:  $54 \div (-6)$

$$= -9$$

### More Than One Operation

|   |                |
|---|----------------|
| B | Brackets       |
| E | Exponents      |
| D | Division       |
| M | Multiplication |
| A | Adding         |
| S | Subtracting    |

} What ever comes first

ex1:  $-10 \times (-4) + 10 \div (-5)$

$$= 40 - 2$$

$$= 38$$

ex2:  $-6 + 9 \times -5$

$$= -6 - 45$$

$$= -51$$

## Part B: Operations with Rational Numbers

### Addition and Subtraction

$$\frac{-2}{5} + \frac{3}{-2} - \frac{3}{10}$$

$$\begin{array}{r} \frac{-4}{10} + \frac{15}{-10} - \frac{3}{10} \\ = \frac{-4}{10} - \frac{3}{10} - \frac{3}{10} \\ = \frac{-14}{10} - \frac{3}{10} \\ = \frac{-17}{10} \end{array}$$

### Multiplication

$$\frac{3}{4} \times \frac{-4}{5}$$

### Division

$$\frac{3}{4} \div \frac{5}{4}$$

$$\begin{array}{r} \frac{3}{4} \times \frac{4}{5} \\ = \frac{12}{20} \\ = \frac{3}{5} \end{array}$$

More than **One** operation: follow BEDMAS

$$\frac{3}{4} \times \frac{-4}{5} \div \frac{-3}{7}$$

$$\begin{array}{l} = \frac{-12}{20} \div \frac{-3}{7} \\ = \frac{-12}{20} \times \frac{7}{-3} \\ = \frac{84}{60} \\ = \frac{7}{5} \end{array}$$

## Part C: Exponent Laws

|                  |                             |
|------------------|-----------------------------|
| Multiplication   | $(a^m)(a^n) = a^{m+n}$      |
| Division         | $\frac{a^m}{a^n} = a^{m-n}$ |
| Power of a Power | $(a^n)^m = a^{nm}$          |

Examples:

1)  $(5^4)(5^{-3}) =$

$5^4 + (-3)$   
 $= 5^1$

2)  $\frac{4^6}{4^{-2}} =$

$6 - (-2)$   
 $= 8$   
 $4^8$

3)  $(3^2)^4 =$

$3^8$

**Remember....**

$-\frac{1}{3}, \frac{1}{(-3)}, -\frac{1}{3}, -\left(\frac{1}{3}\right)$  are all the same

The following mixed numbers are all equal

$-1\frac{1}{6}, -\left(1\frac{1}{6}\right), \frac{(-7)}{6}, \frac{7}{(-6)}, -\frac{7}{6}$

Exponents: What is the difference???

$-3^2 \quad (-3)^2 \quad -(-3)^2 \quad -(3)^2$

$-3 \times 3 \quad -3 \times -3 \quad -(-3 \times -3) \quad = -(3 \times 3)$   
 $= -9 \quad = 9 \quad = -(9) \quad = -9$   
 $\quad \quad \quad = -9$

Assigned Work

p. 461 # 1,3,4,5

p. 462 # 1,2

p. 463 #1-5